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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,200	06/26/2001	Eugene S. Smotkin	491712000100	9382

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MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 300
MCLEAN, VA 22102

EXAMINER	
ALEJANDRO, RAYMOND	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/891,200	SMOTKIN, EUGENE S.
	Examiner	Art Unit
	Raymond Alejandro	1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *75-82 and 84-91* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *75-82 and 84-91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/15/05 has been entered.

This is in reply to the amendment in connection with the foregoing RCE. The applicant has overcome the 35 USC 112 rejection and the 35 USC 102/103 rejections. Refer to the aforesaid amendment for additional details on applicant's rebuttal arguments. However, the present claims (claims 75-82 and 84-91) are finally rejected over the same art as the 35 USC 102 rejections and 35 USC 103 rejections still stand as set forth hereinafter and for the reasons of record:

Election/Restrictions

1. Cancellation of claims 83 and 92 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smotkin et al 5846669 in view of the publication "Solid-State protonic conductors: principles, properties, progress and prospects" by T.Norby (hereinafter referred to as "*the Norby's publication*").

The present application is now directed to a component wherein the disclosed inventive concept comprises the coated support.

Regarding claims 75, 82, 84 and 91:

Smotkin et al disclose an electrolyte system for fuel cells comprising an acid electrolyte, a base electrolyte and a proton permeably dense phase separating the acid electrolyte from the base electrolyte (ABSTRACT). Smotkin et al disclose that their invention relates to electrolyte system for fuel cells operating in a temperature range up to about 300 °C (COL 1, lines 10-15).

Figure 1 below illustrates the dense phase proton permeable material 17 separating acidic electrolyte-containing matrix layer 15 from basic electrolyte-containing matrix layer 16 (FIGURE 1/ COL 4, lines 44-55). It is disclosed that the dense phase proton permeably material comprises a foil of a metal hydride (COL 4, lines 57-64/ COL 3, lines 12-18). *Thus, the metal hydride foil serves as the support which is coated on both sides by respective electrolyte containing matrixes which represents the inorganic/composite non-liquid material.*

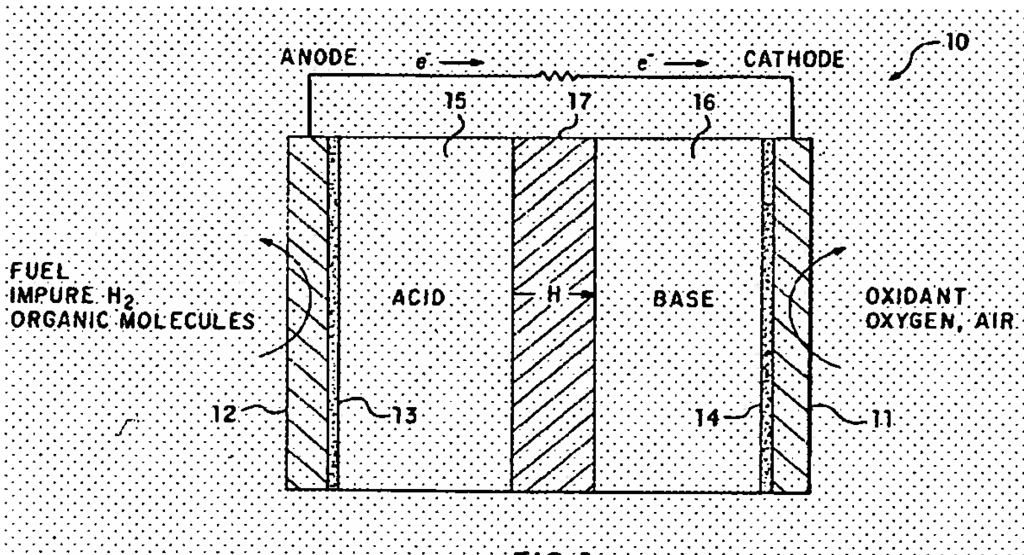


FIG. 1

First Examiner's Note: *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material") covers a very large number of applicable materials which can be used therefor, it is also contended that "a coating material" comprising any non-liquid material would produce a component exhibiting the area-specific resistance (ASR) at the specific temperature range. Thus, such area-specific resistance (ASR) is an inherent characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. any inorganic or composite non-liquid material) would be expected to have at least similar properties **(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)**. Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.*

Second Examiner's Note: *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the*

claim is directed to <u>*any component per se*</u> *and such preamble is only a statement of ultimate intended utility.*

<u>Regarding claims 76-77 and 85-86:</u>

Smotkin et al teaches the use of palladium hydride as the metal hydride foil (COL 4, lines 56-65).

<u>Regarding claims 80-81 and 89-90:</u>

Smotkin et al'669 exemplifies the use of a 25 micron palladium foil as the substrate (COL 5, lines 44-50).

Smotkin et al'669 disclose a fuel cell electrolyte component as described above. However, Smotkin et al'669 does not expressly disclose the specific coating material.

The Norby's publication teaches a solid-state protonic conductor (TITLE) which can be used in a fuel cell as a hydrogen permeable <u>membrane</u> (ABSTRACT). It is disclosed that protonic conductivity are candidates for electrolyte in fuel cells (INTRODUCTION). Norby discloses protonic conductors are electrolyte in which hydrogen is transported towards and evolved at the cathode. It is further disclosed that protonic transport includes transport of protons and any <u>assembly</u> that carries protons and/or <u>proton exchange membranes</u> (PEM) (Sections: 2. Principles of Protonic Conduction-Classes of Proton Conductors, & 4.1 Water-containing Systems: PEMs). The Norby's publication reveals that $Ba_3Ca_{1.18}Nb_{1.82}O_{8.73}$ (BCN18) shows proton conduction (Section: 3. PROPERTIES). It is disclosed the use of hydrate $CsHSO_4$ (SECTION: 2. Principles of Protonic Conduction- Classes of Proton Conductors/ FIGURE 1); and $SrHPO_4$, $Sr(H_2PO_4)_2$, and $Ba(H_2PO_4)_2$ (SECTION: 4.2 Low-Temperature inorganic proton conductors)

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific proton conductor material of the Norby's publication on the metal substrate base of Smotkin et al'669 because the Norby's publication discloses that such specific proton conductor materials are suitable solid-state protonic conductors which can be used in fuel cell applications such as hydrogen permeable membranes. Accordingly, such specific proton conductor material enhances the transport of protons for both chemical processes and energy conversion process (Section: 3. Properties).

4. Claims 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smotkin et al 5846669 in view of Crome et al 5985113.

The present application is now directed to a component wherein the disclosed inventive concept comprises the coated support.

Regarding claims 75, 82, 84 and 91:

Smotkin et al disclose an electrolyte system for fuel cells comprising an acid electrolyte, a base electrolyte and a proton permeably dense phase separating the acid electrolyte from the base electrolyte (ABSTRACT). Smotkin et al disclose that their invention relates to electrolyte system for fuel cells operating in a temperature range up to about 300 °C (COL 1, lines 10-15).

Figure 1 below illustrates the dense phase proton permeable material 17 separating acidic electrolyte-containing matrix layer 15 from basic electrolyte-containing matrix layer 16 (FIGURE 1/ COL 4, lines 44-55). It is disclosed that the dense phase proton permeably material comprises a foil of a metal hydride (COL 4, lines 57-64/ COL 3, lines 12-18). *Thus, the metal*

hydride foil serves as the support which is coated on both sides by respective electrolyte containing matrixes which represents the inorganic/composite non-liquid material.

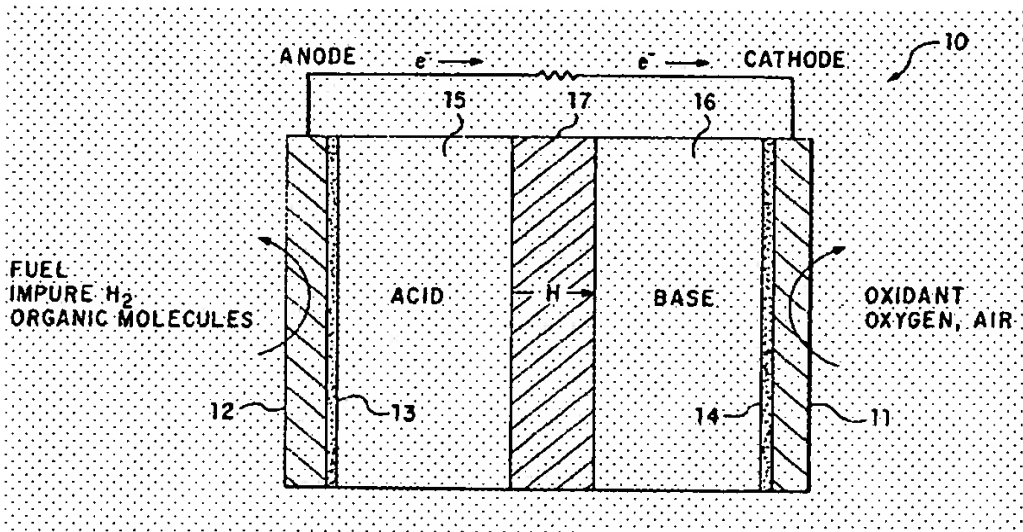


FIG. 1

<u>First Examiner's Note:</u> *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material") <u>covers a very large number of applicable materials</u> which can be used therefor, it is also contended that "a coating material" comprising any <u>non-liquid material</u> would produce a component exhibiting <u>the area-specific resistance (ASR) at the specific temperature range</u>. Thus, such area-specific resistance (ASR) is an <u>inherent</u> characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. <u>any</u> inorganic or composite non-liquid material) would be expected to have at least similar properties **(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)**. Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.*

<u>Second Examiner's Note:</u> *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the claim is directed to <u>any component per se</u> and such preamble is only a statement of ultimate intended utility.*

<u>Regarding claims 76-77 and 85-86:</u>

Smotkin et al teaches the use of palladium hydride as the metal hydride foil (COL 4, lines 56-65).

<u>Regarding claims 80-81 and 89-90:</u>

Smotkin et al'669 exemplifies the use of a 25 micron palladium foil as the substrate (COL 5, lines 44-50).

Smotkin et al'669 disclose a fuel cell electrolyte component as described above. However, Smotkin et al'669 does not expressly disclose the specific coating material.

Crome et al disclose the following (COL 9, lines 10-26):

> For all described embodiments, it is envisioned that the electrolyte material can be selected from the following groups and mixtures thereof:
>
> 5) lanthanum gallade $La_{1-x}Sr_xGa_{1-y}Mg_yO_3$ where $(0<x<0.30)$(where $x=0.10$ is preferred) and $(0.00<y<0.30)$ (where $y=0.20$ is preferred).

Crome et al also envision that the electrolyte material can be selected from a variety of element groups and mixtures thereof including <u>scandium (Sc)</u> (CLAIM 12/ COL 9, lines 10-26). *Thus, it is asserted that scandium (Sc) can replace gallium (Ga) in the ceramic composite chemical formula.*

In view of this disclosure, it would have been obvious to one skilled in the art at the time the invention was made to use the specific proton conductor material of Crome et al on the metal

substrate base of Smotkin et al'669 as Crome et al teaches that, for all described embodiments, it is envisioned that the electrolyte material can be selected from a variety of groups and mixtures including an alternative use of scandium element (Sc) as this allows the fuel cell stack to operate in multiple temperature regions including the claimed temperature range and provides efficiency power systems. Moreover, Crome et al directly teach that scandium (Sc) can be a doping element which might substitute or replace any element in electrolyte composite materials . Further, those of ordinary skill in the art knows that scandium (Sc) element may be a substitute element in composite materials as both elements Sc and Ga shows the same chemical valence.

5. Claims, 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smotkin et al 5846669 in view of the publication "Chemical stability and proton conductivity of doped BaCeO3-BaZrO3 solid solutions" by Kwang Hyun Ryu et al (hereinafter referred to as "*the Kwang's publication*").

The present application is now directed to a component wherein the disclosed inventive concept comprises the coated support.

<u>Regarding claims 75, 82, 84 and 91:</u>

Smotkin et al disclose an electrolyte system for fuel cells comprising an acid electrolyte, a base electrolyte and a proton permeably dense phase separating the acid electrolyte from the base electrolyte (ABSTRACT). Smotkin et al disclose that their invention relates to electrolyte system for fuel cells operating in a temperature range up to about 300 °C (COL 1, lines 10-15).

<u>**Figure 1**</u> below illustrates the dense phase proton permeable material 17 separating acidic electrolyte-containing matrix layer 15 from basic electrolyte-containing matrix layer 16

(FIGURE 1/ COL 4, lines 44-55). It is disclosed that the dense phase proton permeably material comprises a foil of a metal hydride (COL 4, lines 57-64/ COL 3, lines 12-18). *Thus, the metal hydride foil serves as the support which is coated on both sides by respective electrolyte containing matrixes which represents the inorganic/composite non-liquid material.*

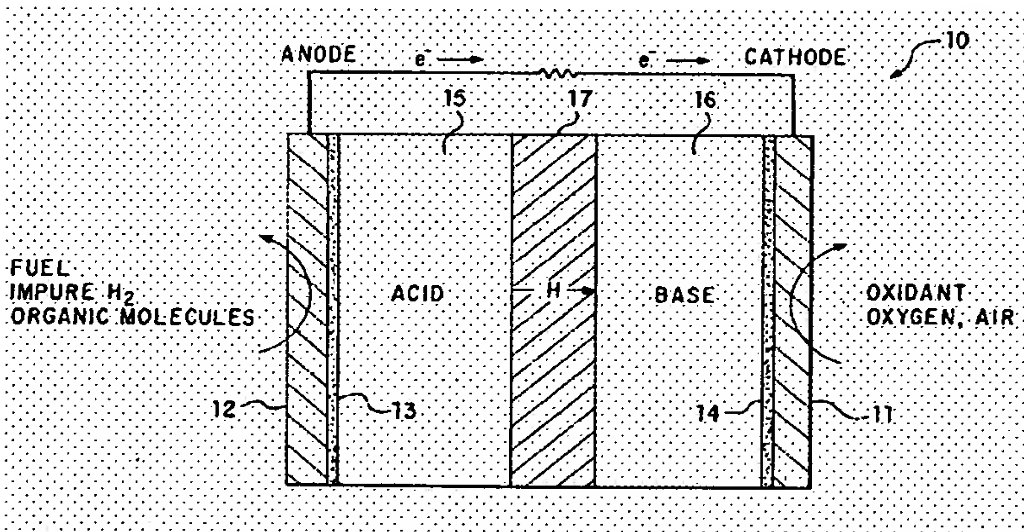


FIG. 1

First Examiner's Note: *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material") <u>covers a very large number of applicable materials</u> which can be used therefor, it is also contended that "a coating material" comprising any <u>non-liquid material</u> would produce a component exhibiting <u>the area-specific resistance (ASR) at the specific temperature range</u>. Thus, such area-specific resistance (ASR) is an <u>inherent</u> characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. <u>any</u> inorganic or composite non-liquid material) would be expected to have at least similar properties* ***(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)***. *Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the*

missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.

Second Examiner's Note: *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the claim is directed to any component per se and such preamble is only a statement of ultimate intended utility.*

Regarding claims 76-77 and 85-86:

Smotkin et al teaches the use of palladium hydride as the metal hydride foil (COL 4, lines 56-65).

Regarding claims 80-81 and 89-90:

Smotkin et al'669 exemplifies the use of a 25 micron palladium foil as the substrate (COL 5, lines 44-50).

Smotkin et al'669 disclose a fuel cell electrolyte component as described above. However, Smotkin et al'669 does not expressly disclose the specific coating material.

The Kwang's publication teaches solid solutions such as $BaCe_{0.9-x}Zr_xM_{0.1}O_{3-\Lambda}$ where M is Gd or Nd and x ranges from 0-0.4 (ABSTRACT). It is disclosed that this composition gives a good compromise between conductivity and stability for fuel cell applications (ABSTRACT).

In light of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the solid composition of the Kwang's publication as the specific proton conducting material on the metal substrate base of Smotkin et al'669 because the Kwang's publication teaches this composition gives a good compromise between conductivity and stability for fuel cell applications as it has been found that this composite compound exhibits

both high conductivity, good stability and an increased in the activation energy for proton transport.

6. Claims 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smotkin et al 5846669 in view of the publication "Proton and oxide ion conductivity of doped LaScO3" by Dorthe Lybye et al (hereinafter referred to as "*the Dorthe's publication*").

The present application is now directed to a component wherein the disclosed inventive concept comprises the coated support.

Regarding claims 75, 82, 84 and 91:

Smotkin et al disclose an electrolyte system for fuel cells comprising an acid electrolyte, a base electrolyte and a proton permeably dense phase separating the acid electrolyte from the base electrolyte (ABSTRACT). Smotkin et al disclose that their invention relates to electrolyte system for fuel cells operating in a temperature range up to about 300 °C (COL 1, lines 10-15).

Figure 1 below illustrates the dense phase proton permeable material 17 separating acidic electrolyte-containing matrix layer 15 from basic electrolyte-containing matrix layer 16 (FIGURE 1/ COL 4, lines 44-55). It is disclosed that the dense phase proton permeably material comprises a foil of a metal hydride (COL 4, lines 57-64/ COL 3, lines 12-18). *Thus, the metal hydride foil serves as the support which is coated on both sides by respective electrolyte containing matrixes which represents the inorganic/composite non-liquid material.*

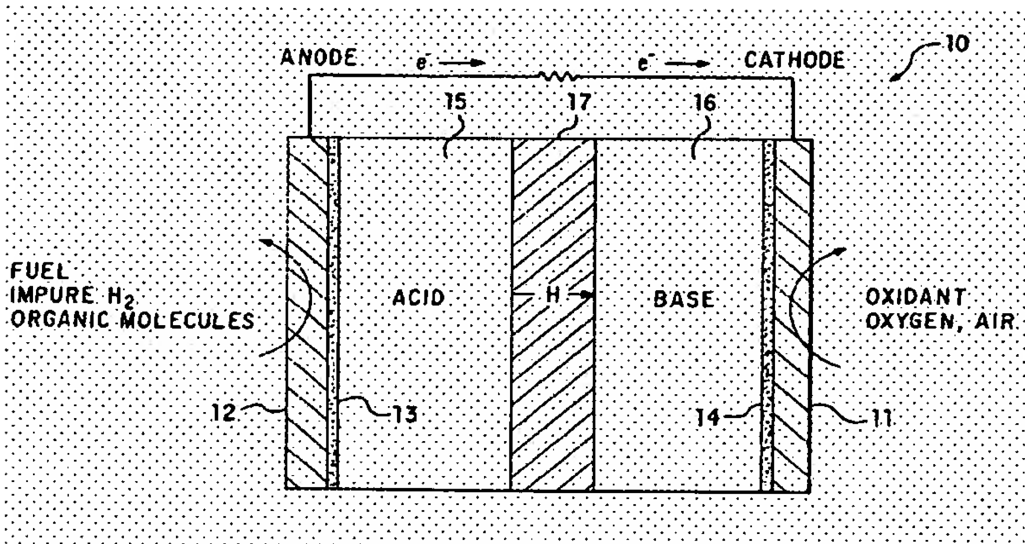


FIG. 1

<u>First Examiner's Note:</u> *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material") <u>covers a very large number of applicable materials</u> which can be used therefor, it is also contended that "a coating material" comprising any <u>non-liquid material</u> would produce a component exhibiting <u>the area-specific resistance (ASR) at the specific temperature range</u>. Thus, such area-specific resistance (ASR) is an <u>inherent</u> characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. <u>any</u> inorganic or composite non-liquid material) would be expected to have at least similar properties* ***(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)****. Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.*

<u>Second Examiner's Note:</u> *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the*

claim is directed to <u>any component per se</u> and such preamble is only a statement of ultimate intended utility.

<u>Regarding claims 76-77 and 85-86:</u>

Smotkin et al teaches the use of palladium hydride as the metal hydride foil (COL 4, lines 56-65).

<u>Regarding claims 80-81 and 89-90:</u>

Smotkin et al'669 exemplifies the use of a 25 micron palladium foil as the substrate (COL 5, lines 44-50).

Smotkin et al'669 disclose a fuel cell electrolyte component as described above. However, Smotkin et al'669 does not expressly disclose the specific coating material.

The Dorthe's publication teaches that conductivity of $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ has been studied (ABSTRACT), particularly at 400°C (Section: 2. EXPERIMENTAL). It is also disclosed that the conductivity measurements suggests that $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ is also a proton conductor (Section: 3. RESULTS and DISCUSSIONS).

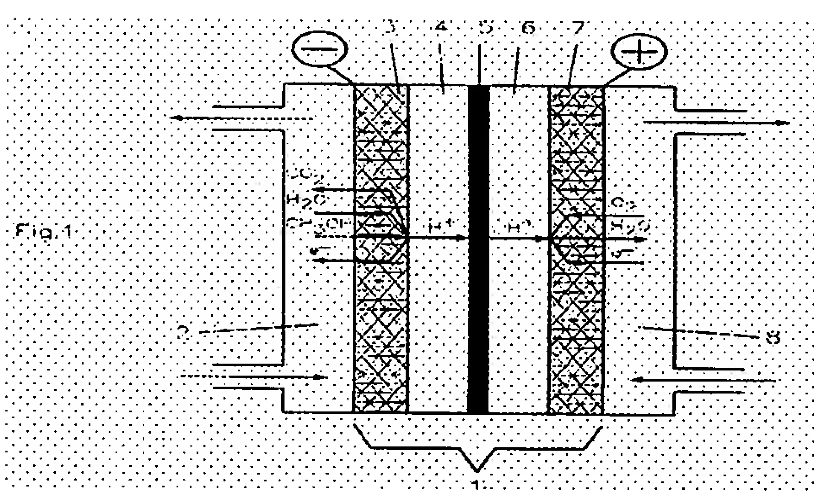
In light of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the compound of the Dorthe's publication as the specific proton conducting material on the metal substrate base of Smotkin et al'669 because the Dorthe's publication teaches that such compound exhibit excellent proton conduction at temperatures below 700°C. Accordingly, the specified compound is a proton conductor showing satisfactory ionic conductivity.

7. Claims 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over the WO 98/21777 publication (herein called "*the WO '777 publication*") in view of the publication "Solid-State protonic conductors: principles, properties, progress and prospects" by T.Norby (hereinafter referred to as "*the Norby's publication*").

Regarding claims 75, 82, 84 and 91:

The WO'777 publication discloses a fuel cell electrode-electrolyte unit wherein the electrolyte is divided up into two electrolyte layers 4, 6 with a blocking layer 5 therebetween (ABSTRACT). The blocking layer is made from a palladium silver alloy. The electrolyte unit is suitable for fuel cells (ABSTRACT).

Figure 1 below illustrates the palladium silver alloy foil layer 5 the two non-liquid electrolyte layers 4 and 6 (FIGURE 1). *Thus, the palladium silver alloy foil layer serves as the support which is coated on both sides by respective electrolyte layers which represents the inorganic/composite non-liquid material.*



First Examiner's Note: *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material") covers a very large number of applicable materials which can be used therefor, it is also contended that "a coating material" comprising any non-liquid material would produce a component exhibiting the area-specific resistance (ASR) at the specific*

<u>temperature range</u>. Thus, such area-specific resistance (ASR) is an <u>inherent</u> characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. <u>any</u> inorganic or composite non-liquid material) would be expected to have at least similar properties ***(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)****. Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.*

<u>Second Examiner's Note:</u> *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the claim is directed to <u>any component per se</u> and such preamble is only a statement of ultimate intended utility.*

<u>As to claims 76-77 and 85-86:</u>

The WO'777 publication divulges that the blocking layer (the support) is made from a palladium silver alloy (ABSTRACT).

<u>With reference to claims 80-81 and 89-90:</u>

The WO'777 publication teaches that the palladium-silver layer has a thickness ranging from 5-50 Tm (page 4, lines 1-2/ page 5, lines 10-15). *In this case, it is noted that, at least, the end points (i.e. 5 Tm and/or 50 Tm) also constitute a valid date point and thus it anticipates the claim as the end point represents a specific disclosure of a discrete embodiment of the invention*

disclosed by the prior art which amounts to a complete description and, therefore, an anticipation of the claimed range. ***See Ex Parte Lee 31 USPQ2d 1105.***

The WO'777 publication discloses a fuel cell electrolyte component according to the foregoing description. However, the WO'777 publication fails to reveal the particular coating material.

The Norby's publication teaches a solid-state protonic conductor (TITLE) which can be used in a fuel cell as a hydrogen permeable membrane (ABSTRACT). It is disclosed that protonic conductivity are candidates for electrolyte in fuel cells (INTRODUCTION). Norby discloses protonic conductors are electrolyte in which hydrogen is transported towards and evolved at the cathode. It is further disclosed that protonic transport includes transport of protons and any assembly that carries protons and/or proton exchange membranes (PEM) (Sections: 2. Principles of Protonic Conduction-Classes of Proton Conductors, & 4.1 Water-containing Systems: PEMs). The Norby's publication reveals that $Ba_3Ca_{1.18}Nb_{1.82}O_{8.73}$ (BCN18) shows proton conduction (Section: 3. PROPERTIES). It is disclosed the use of hydrate $CsHSO_4$ (SECTION: 2. Principles of Protonic Conduction- Classes of Proton Conductors/ FIGURE 1); and $SrHPO_4$, $Sr(H_2PO_4)_2$, and $Ba(H_2PO_4)_2$ (SECTION: 4.2 Low-Temperature inorganic proton conductors)

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific proton conductor material of the Norby's publication on the metal substrate base of the WO'777 publication because the Norby's publication discloses that such specific proton conductor materials are suitable solid-state protonic conductors which can be used in fuel cell applications such as hydrogen permeable membranes. Accordingly, such

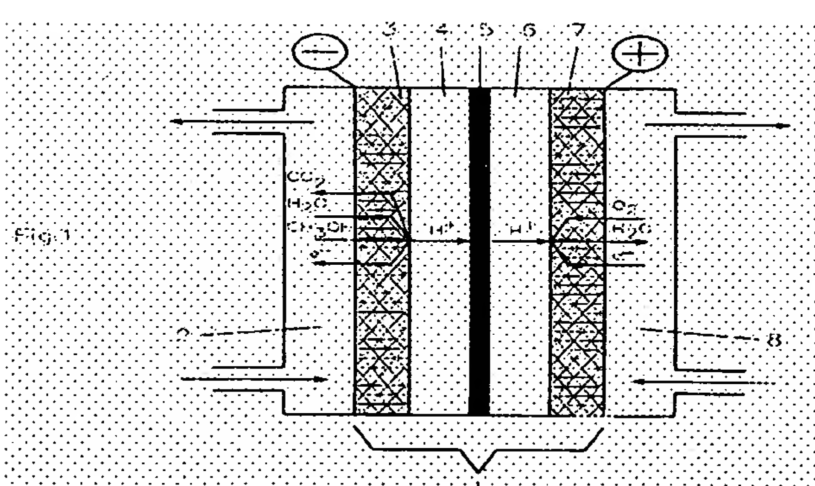
specific proton conductor material enhances the transport of protons for both chemical processes and energy conversion process (Section: 3. Properties).

8. Claims 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over the WO 98/21777 publication (herein called "*the WO '777 publication*") in view of Crome et al 5985113.

Regarding claims 75, 82, 84 and 91:

The WO'777 publication discloses a fuel cell electrode-electrolyte unit wherein the electrolyte is divided up into two electrolyte layers 4, 6 with a blocking layer 5 therebetween (ABSTRACT). The blocking layer is made from a palladium silver alloy. The electrolyte unit is suitable for fuel cells (ABSTRACT).

Figure 1 below illustrates the palladium silver alloy foil layer 5 the two non-liquid electrolyte layers 4 and 6 (FIGURE 1). *Thus, the palladium silver alloy foil layer serves as the support which is coated on both sides by respective electrolyte layers which represents the inorganic/composite non-liquid material.*



First Examiner's Note: *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material")* covers a very large number of applicable materials *which can*

be used therefor, it is also contended that "a coating material" comprising any non-liquid material would produce a component exhibiting the area-specific resistance (ASR) at the specific temperature range. Thus, such area-specific resistance (ASR) is an inherent characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. any inorganic or composite non-liquid material) would be expected to have at least similar properties ***(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)****. Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.*

Second Examiner's Note: *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the claim is directed to any component per se and such preamble is only a statement of ultimate intended utility.*

As to claims 76-77 and 85-86:

The WO'777 publication divulges that the blocking layer (the support) is made from a palladium silver alloy (ABSTRACT).

With reference to claims 80-81 and 89-90:

The WO'777 publication teaches that the palladium-silver layer has a thickness ranging from 5-50 Tm (page 4, lines 1-2/ page 5, lines 10-15). *In this case, it is noted that, at least, the end points (i.e. 5 Tm and/or 50 Tm) also constitute a valid date point and thus it anticipates the*

claim as the end point represents a specific disclosure of a discrete embodiment of the invention disclosed by the prior art which amounts to a complete description and, therefore, an anticipation of the claimed range. ***See Ex Parte Lee 31 USPQ2d 1105.***

The WO'777 publication discloses a fuel cell electrolyte component according to the foregoing description. However, the WO'777 publication fails to reveal the particular coating material.

Crome et al also disclose the following:

<u>As to claim 31:</u>

Crome et al disclose the following (COL 9, lines 10-26):

> For all described embodiments, it is envisioned that the electrolyte material can be selected from the following groups and mixtures thereof:

> 5) lanthanum gallade $La_{1-x}Sr_xGa_{1-y}Mg_yO_3$ where $(0<x<0.30)$(where $x=0.10$ is preferred) and $(0.00<y<0.30)$ (where $y=0.20$ is preferred).

Crome et al also envision that the electrolyte material can be selected from a variety of element groups and mixtures thereof including <u>scandium (Sc)</u> (CLAIM 12/ COL 9, lines 10-26). *Thus, it is asserted that scandium (Sc) can replace gallium (Ga) in the ceramic composite chemical formula.*

In view of this disclosure, it would have been obvious to one skilled in the art at the time the invention was made to use the specific proton conductor material of Crome et al on the metal substrate base of the WO'777 publication as Crome et al teaches that, for all described embodiments, it is envisioned that the electrolyte material can be selected from a variety of groups and mixtures including an alternative use of scandium element (Sc) as this allows the fuel cell stack to operate in multiple temperature regions including the claimed temperature range and

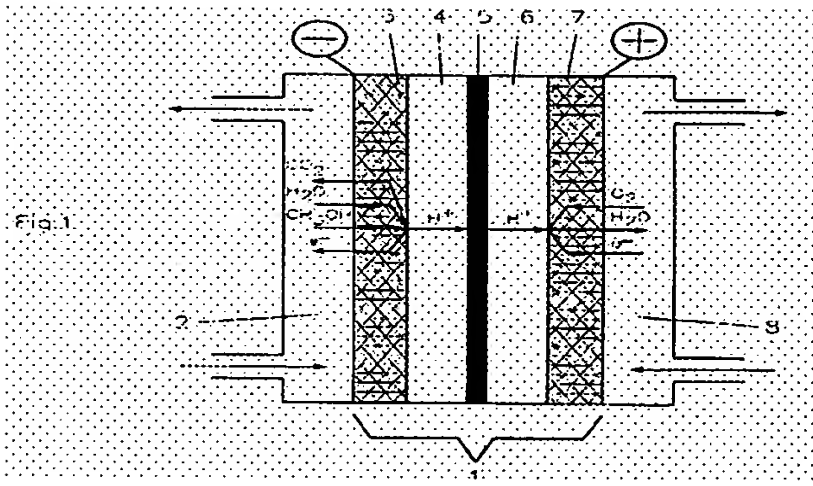
provides efficiency power systems. Moreover, Crome et al directly teach that scandium (Sc) can be a doping element which might substitute or replace any element in electrolyte composite materials . Further, those of ordinary skill in the art knows that scandium (Sc) element may be a substitute element in composite materials as both elements Sc and Ga shows the same chemical valence.

9. Claims 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over the WO 98/21777 publication (herein called "*the WO '777 publication*") in view of the publication "Chemical stability and proton conductivity of doped BaCeO3-BaZrO3 solid solutions" by Kwang Hyun Ryu et al (hereinafter referred to as "*the Kwang's publication*").

Regarding claims 75, 82, 84 and 91:

The WO'777 publication discloses a fuel cell electrode-electrolyte unit wherein the electrolyte is divided up into two electrolyte layers 4, 6 with a blocking layer 5 therebetween (ABSTRACT). The blocking layer is made from a palladium silver alloy. The electrolyte unit is suitable for fuel cells (ABSTRACT).

Figure 1 below illustrates the palladium silver alloy foil layer 5 the two non-liquid electrolyte layers 4 and 6 (FIGURE 1). *Thus, the palladium silver alloy foil layer serves as the support which is coated on both sides by respective electrolyte layers which represents the inorganic/composite non-liquid material.*



First Examiner's Note: *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material") covers a very large number of applicable materials which can be used therefor, it is also contended that "a coating material" comprising any non-liquid material would produce a component exhibiting the area-specific resistance (ASR) at the specific temperature range. Thus, such area-specific resistance (ASR) is an inherent characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. any inorganic or composite non-liquid material) would be expected to have at least similar properties* ***(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)****. Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.*

Second Examiner's Note: *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the claim is directed to any component per se and such preamble is only a statement of ultimate intended utility.*

As to claims 76-77 and 85-86:

The WO'777 publication divulges that the blocking layer (the support) is made from a palladium silver alloy (ABSTRACT).

With reference to claims 80-81 and 89-90:

The WO'777 publication teaches that the palladium-silver layer has a thickness ranging from 5-50 Tm (page 4, lines 1-2/ page 5, lines 10-15). *In this case, it is noted that, at least, the end points (i.e. 5 Tm and/or 50 Tm) also constitute a valid date point and thus it anticipates the claim as the end point represents a specific disclosure of a discrete embodiment of the invention disclosed by the prior art which amounts to a complete description and, therefore, an anticipation of the claimed range.* ***See Ex Parte Lee 31 USPQ2d 1105.***

The WO'777 publication discloses a fuel cell electrolyte component according to the foregoing description. However, the WO'777 publication fails to reveal the particular coating material.

The Kwang's publication teaches solid solutions such as $BaCe_{0.9-x}Zr_xM_{0.1}O_{3-\Lambda}$ where M is Gd or Nd and x ranges from 0-0.4 (ABSTRACT). It is disclosed that this composition gives a good compromise between conductivity and stability for fuel cell applications (ABSTRACT).

In light of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the solid composition of the Kwang's publication as the specific proton conducting material on the metal substrate base of the WO'777 publication because the Kwang's publication teaches this composition gives a good compromise between conductivity and stability for fuel cell applications as it has been found that this composite compound exhibits

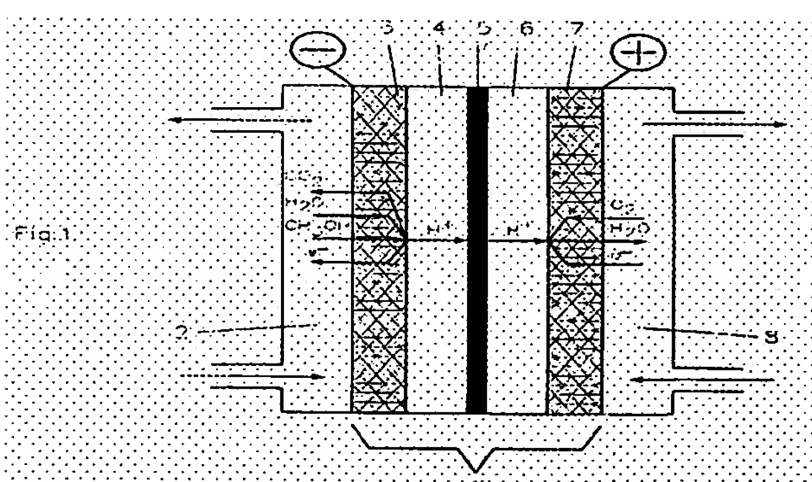
both high conductivity, good stability and an increased in the activation energy for proton transport.

10. Claims 75-82 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over the WO 98/21777 publication (herein called "*the WO'777 publication*") in view of the publication "Proton and oxide ion conductivity of doped LaScO3" by Dorthe Lybye et al (hereinafter referred to as "*the Dorthe's publication*").

Regarding claims 75, 82, 84 and 91:

The WO'777 publication discloses a fuel cell electrode-electrolyte unit wherein the electrolyte is divided up into two electrolyte layers 4, 6 with a blocking layer 5 therebetween (ABSTRACT). The blocking layer is made from a palladium silver alloy. The electrolyte unit is suitable for fuel cells (ABSTRACT).

Figure 1 below illustrates the palladium silver alloy foil layer 5 the two non-liquid electrolyte layers 4 and 6 (FIGURE 1). *Thus, the palladium silver alloy foil layer serves as the support which is coated on both sides by respective electrolyte layers which represents the inorganic/composite non-liquid material.*



First Examiner's Note: *since the recited "coating material" (i.e. "the inorganic or composite non-liquid material") covers a very large number of applicable materials which can be used therefor, it is also contended that "a coating material" comprising any non-liquid material would produce a component exhibiting the area-specific resistance (ASR) at the specific temperature range. Thus, such area-specific resistance (ASR) is an inherent characteristic or property of the respective electrolyte containing matrixes representing the inorganic/composite non-liquid material. That is, materials of at least similar compositions (i.e. any inorganic or composite non-liquid material) would be expected to have at least similar properties* ***(See MPEP 2112: Requirements of Rejection Based on Inherency; Burden of Proof)****. Thus, the prior art coated component seems to be identical except that the prior art is silent as to an inherent property and/or characteristic. In that, it is noted that the extrinsic evidence makes clear that the missing descriptive matter is necessarily present in coated component described in the reference, and that it would be so recognized by persons of ordinary skill.*

Second Examiner's Note: *as to the specific preamble reciting "designed to serve as an electrolyte in a fuel cell", it is pointed out that the preamble refers to intended use. That is, the claim is directed to any component per se and such preamble is only a statement of ultimate intended utility.*

As to claims 76-77 and 85-86:

The WO'777 publication divulges that the blocking layer (the support) is made from a palladium silver alloy (ABSTRACT).

With reference to claims 80-81 and 89-90:

The WO'777 publication teaches that the palladium-silver layer has a thickness ranging from 5-50 Tm (page 4, lines 1-2/ page 5, lines 10-15). *In this case, it is noted that, at least, the end points (i.e. 5 Tm and/or 50 Tm) also constitute a valid date point and thus it anticipates the claim as the end point represents a specific disclosure of a discrete embodiment of the invention disclosed by the prior art which amounts to a complete description and, therefore, an anticipation of the claimed range.* ***See Ex Parte Lee 31 USPQ2d 1105.***

The WO'777 publication discloses a fuel cell electrolyte component according to the foregoing description. However, the WO'777 publication fails to reveal the particular coating material.

The Dorthe's publication teaches that conductivity of $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ has been studied (ABSTRACT), particularly at 400°C (Section: 2. EXPERIMENTAL). It is also disclosed that the conductivity measurements suggests that $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ is also a proton conductor (Section: 3. RESULTS and DISCUSSIONS).

In light of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the compound of the Dorthe's publication as the specific proton conducting material on the metal substrate base of the WO'777 publication because the Dorthe's publication teaches that such compound exhibit excellent proton conduction at temperatures below 700°C. Accordingly, the specified compound is a proton conductor showing satisfactory ionic conductivity.

Response to Arguments

11. Applicant's arguments filed on 07/15/05 have been fully considered but they are not persuasive.

12. Although believed unnecessary due to the new grounds of rejections (the different combinations under the 35 USC 103 statute), the examiner likes to briefly address the following arguments raised by the applicants.

13. (*new response*) Applicant has mostly contended that the bases for the 35 USC 103 rejections may be in error simply because the secondary references, in general, do not teaches that "*the specific coating material...when used as an electrolyte is required to be so thin*", or "*the resulting electrolyte must be supplied in a fragile, very thin layer*". First of all, applicant is reminded herein one more time that his intended invention is "*a component*" per se, that is, any component comprising a metal/metal hydride support coated with the specific material. All over again, the specific preamble reciting "designed to serve as an electrolyte in a fuel cell" is still deemed to refer to intended use. That is, the claim is directed to <u>any component per se</u> and such preamble is only a statement of ultimate intended utility. That being said, it is thus contested that the foregoing applicant's arguments are not commensurate in scope with the instantly claimed invention (i.e. the component itself). Secondly, other than stating an apparent relationship between the thickness of the coating and its area-specific protonic resistance, there is <u>nothing in</u> the present claim language that positively recites or fairly sets forth the thickness (i.e. how thin) of the coating material so as to further define at least a coating structure. Thus, absent further stipulations about the specific thickness of the coating material, applicant's arguments concerning this particular matter are inapposite and unfounded. Moreover, while applicant may

believe that there is such a close relationship between the coating thickness and the coating protonic resistance characteristics, there is little information on the record, and ultimately recited in the claims, supporting said applicant's contention.

14. (*new response*) In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). *In this case, it is believed that all of the cited and applied references (primary and secondary references) are pertinent to each other, and in due course, within the field of applicant's endeavor as they all discuss subject matter about significant protonic activity, functionality and applicability for electrochemical cells, particularly, fuel cells. Thus, since they all share the same field of endeavor and applicant's field of endeavor, it can be fairly stated that they all are relevant to one another, and those of skilled in the art would definitely look at the applied references as a whole combination to instruct themselves about protonic activity in membranes and resolve issues associated with such protonic membrane when used as electrolyte components in power generating fuel cells.*

15. (*new response*) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*the thin layer" or "ultra-thin layer"*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read

into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). *Nothing in the present claims sets forth the intended thickness of the coating material.*

16. (*new response*) In particular response to applicant's arguments that the recitation "*designed to serve as an electrolyte in a fuel cell*" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). ***(emphasis added→)*** *Applicant's attention is particularly directed to the following, in this case, i) the body of the claim following the preamble is a self-contained description of the structure and does not depend on the preamble for completeness Kropa v. Robbie, 88 USPQ 480-481; Rowe USPQ2d 1553; IMS Technology Inc. vs. Haas Automation Inc. 54 USPQ2d 1129, 1137; ii) the preamble recites the use or purpose of the claimed invention and thus, it does not limit the claims Catalina, 62 USPQ2d 1785; iii) the preamble merely extols benefits or features of the claimed invention and there is no clear reliance on those benefits or features as patentably significant STX, LLC v. Brine, Inc. 54 USPQ2d 1347, 1349.*

The following responses to applicant's arguments were presented in the prior office action. Applicant is advised that if he decides to re-argue any argument already presented, the examiner will be reinstating applicable response(s).

17. Applicant has provided a variety of arguments throughout the entire Remark section of the foregoing amendment. The main and principal arguments can be essentially summarized as follows: a) "*no reference was cited that discloses a coating of an electronically-insulating proton-conducting (EIPC) material that is an inorganic or composite non-liquid on a metal or metal hydride support*"; b) "*No motivation has been shown for combining the permeability barriers of Smotkin or WO '777 with any of the disclosed EIPC materials*"; c) "*...there is objective evidence of nonobviousness in Norby...*".

18. With respect to applicant's arguments regarding the electronically-insulating proton-conducting (EIPC) material being an inorganic or composite non-liquid, the examiner briefly states that applicant's claim interpretation differs from the examiner's claim interpretation. In that, it is further stated that the specific claim language "*an inorganic or composite non-liquid material*" has been construed as reciting either an inorganic material per se or a composite non-liquid material. Accordingly, this interpretation permits the inclusion of any inorganic material as well as any composite non-liquid material. In contrasts, applicants now argues that such claim language specifically refers to either an inorganic non-liquid material or a composite non-liquid material. The examiner respectfully disagrees with applicant's claim interpretation. Accordingly, in its broadest-semantically reasonable interpretation, it is strenuously contended that the present claim language encompasses two extremely large groups of materials: a) any inorganic material (regardless of its state {liquid, solid or gas or plasma}), or b) any composite non-liquid material. That's why it is reiterated that the coating materials of the prior art fully satisfy the claimed requirement of being either an inorganic material (*i.e. Smotkin's concentrated phosphoric acid in a silicon carbide matrix or concentrated potassium hydroxide in a potassium hexatitanate*

matrix) or composite non-liquid material (*i.e. Smotkin's Nafion 115 polymer or the WO'777 free-standing polymer membrane*).

19. In response to applicant's argument that "*No motivation has been shown for combining the permeability barriers of Smotkin or WO'777 with any of the disclosed EIPC materials*", the fact that applicant has recognized another advantage/disadvantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

20. Concerning applicant's arguments regarding the applicability and validity of the *Norby* reference, it appears that applicant is attempting to disqualify or discredit the teachings of ***all*** prior art references based upon Norby's singular findings. That is to say, applicant is apparently of the opinion that the authenticity and soundness of the technical and scientific evidence of Norby's findings is strong enough that no other reference (prior art) at all can be cited or used, for technical and objective purposes, in view of Norby's finding. The examiner again respectfully disagrees with applicant's position. Furthermore, the examiner makes no comments about the validity, applicability, authenticity or technical authority of both the Norby's findings and/or the prior art of record. The prior art of record has been cited hereinabove because they, in fact, discloses substantially the same subject matter that applicant is intending to claim as the invention. As a consequence, applicant's arguments including any *vis-à-vis* comparison between the prior art of record and the Norby's finding lacks validity in its entirety, and thus, they have been fully discarded, deemed inappropriate, and not considered on their merits.

21. In addition, the examiner also wishes to briefly address other arguments raised by the applicant on the Remark section.

22. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*Yet the Nafion component prevents structures such as those in the cited references from operating in the desired temperature range, i.e. much above 100 °C...*") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

23. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

24. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, the applied references are combinable between them simply because they all address the same problem of providing suitable membrane components per se as instantly claimed.

25. In response to applicant's argument that "*Smotkin use a Pd or other metal or metal hydride in addition to a polymer membrane EIPC layer for one stated reason: it prevents diffusion of carbon dioxide or fuels such as methanol across the membrane assembly...*", the fact that applicant has recognized another advantage/disadvantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

26. Arguments that the alleged anticipatory prior art is "*nonanalogous art*" or "*teaches away*" from the invention' or is not recognized as solving the problem solved by the claimed invention, are not germane to a rejection under section 35 USC 102. Twin Disc, Inc. v. United States, 231 USPQ 417, 424. See also State Contracting & Eng ' g Corp. v. Condotte America, Inc., 346 F.3d 1057, 1068, 68 USPQ2d 1481, 1488 **(See MPEP 2131.05 [R-2] Nonanalogous Art)**.

27. In response to applicant's arguments that "*When saying it would be obvious to combine references that teach other EIPC materials with the teachings of Smotkin or WO'777, the office assumes, without explaining, that such barrier function would also be desirable in combination...*" and/or "*There is no basis in the references to expect the claimed combination to succeed*", since the prior art references do not provide any indication that such materials are specially restricted to any particular system and/or environment as speculated by the applicants,

the burden is shifted to the applicants to provide objective evidence demonstrating that such other EIPC materials when used as applied in the membrane of Smotkin or the WO'777 will indeed cause detrimental effects thereto. That is to say, the burden is shifted to the applicants to supply, provide or present objective evidence showing why such other EIPC materials cannot function in a substantially similar membrane structure.

28. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*the support is coated with the EIPC material so that the two are* *__interfaced__* *well enough to provide proton conductivity through the multiplayer composite*" or "*intimate interface*") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). *__The present claims are absolutely silent as to the specific interfacing limitation; they just recite "a coating" regardless of its specific interfacing, embedding, interconnecting and/or adhesiveness structure.__* __In the absence of a specific definition of what constitutes "*a coating*" per se, it is contended that "a coating" is any layer or film material.__

29. In response to applicant's argument that "*...then hot-presses the polymer membrane onto the treated foil, which ensures that the ion-conducting polymer is intensively bound to the surface of the interlayer*", the fact that applicant has recognized another __advantage/disadvantage__ which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

30. Applicant has contended that "*The cited references provide no guidance on the preparation or properties of coating of such EIPC materials on any support*". In the same manner, the present claims also fail to provide guidance on such preparation. Thus, such "no guidance" argument is equally applicable to both the present claim language and the prior art of record.

31. In response to applicant's argument that "*the reference state that the Nafion membranes only operates at temperatures where they are hydrated-see Norby*", the fact that applicant has recognized another advantage/disadvantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

32. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*The ASR limitation is included to limit the* ***thickness*** *of the coating*") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). *The present claims do not recite any particular* ***thickness*** *at all. Moreover, applicant's attempt to equate the limitation ASR to thickness is completely out of place in view of lack of scientific evidence which correlates the ASR to thickness.*

33. In response to applicant's arguments that "*...since the present application relates fuel cell construction, references to hydrogen permeable membrane, even if used in conjunction with a fuel cell, are arguably non-analogous art*", it is merely contended that the present claims are

directed to "**a component**" per se. In other words, the present claims are not directed to "a fuel cell" itself; therefore, applicant's argument are not commensurate in scope with the invention.

34. In response to applicant's argument that "...*Crome is really non-analogous art*..." is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). *In this case, the mere fact that Crome discloses the materials can be electrolyte provides sufficient guidance to those of ordinary skill in art to combine Crome's teachings or, at least, potentially consider Crome's teachings as possible electrolytic features.*

35. With respect to applicant's argument concerning that "*the fact that Sc is among the variety of groups and mixtures enumerated in the reference does not render it "obvious" in the absence of guidance that would lead one to select that particular tree from among the forest of alternatives and mixture thereof*", the examiner positively contends that the prior art of record specifically named "Sc". It is additionally asserted that the generic chemical formula of a prior art does anticipate the claimed species covered by the formula when the species can be "at once envisaged" from the formula. That is, when the compound is not specifically named, but instead it is necessary to select portions of teachings within a reference and combine them, e.g., select various substituents from a list of alternatives given for placement at specific sites on a generic chemical formula to arrive at a specific composition, anticipation can only be found if the classes of substituents are sufficiently limited or well delineated. If one of ordinary skill in the art is able to "*at once envisage*" the specific compound within the generic chemical formula, the compound

is anticipated. In this case, it is stated that the prior art of record clearly names or identifies the claimed Sc element, if not, at least the prior art of record does envisage the use of the claimed Sc element.

36. With respect to applicant's arguments that "*The composition in Kwang do exhibit at least some proton conductivity, however, their properties are not well explored*" and "*...Kwang is an investigation in progress...*", it is noted that a newly discovered property does not necessarily mean the product is unobvious, since this property may be inherent in the prior art. *In re Best 195 USPQ 430; In re Swinehart 169 USPQ 226.*

37. In response to applicant's arguments that "*Lybye discusses $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ and present results that $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ is not only an oxide conductor but also a proton conductor...the reference teaches that this material was also found to have substantial p-type conductivity...is thus at best a mixed conductor*", it is noted that products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property of being electronically-insulating proton-conducting (EIPC) is necessarily present in the prior art material. On the other hand, *assuming arguendo* that $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ does not exhibit the claimed EIPC property (as argued by the applicant), it can thus be reasonably stated that applicant's $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ material also fails to exhibit such claimed EIPC property (**←emphasis added**). Thus, applicant's claim that his $La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$ material is indeed an EIPC material may be incorrect, ill-founded and misleading. *Applicant is courteously required to explain or clarify this issue; otherwise it may be further understood that such material or other claimed materials are not EIPC materials* (**←emphasis added**).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Primary Examiner
Art Unit 1745

RAYMOND ALEJANDRO
PRIMARY EXAMINER